

1      Amendments to the Claims:

2      This listing of claims will replace all prior versions, and  
3      listings, of claims in the application using (Original) (Currently  
4      Amended) (New) (Canceled) (Previously Presented) nomenclature, as  
5      recited in the below listing of claims.

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7      1. (Previously Presented) A timing recovery loop for generating  
8      adjusted timing pulses from a baseband signal waveform encoding a  
9      self clocking digital bit stream, the timing recovery loop  
10     comprising,

11     a pulse detector for generating data transition pulses from the  
12    baseband signal waveform, the pulse detector for comparing the data  
13    transition pulses with the adjusted timing pulses for generating  
14    early signals and lag signals,

15     a random walk counter for counting the early signals and lag  
16    signals for generating a running count,

17     a threshold comparator for determining when the running count  
18    exceeds a predetermined threshold value, and

19     a timing pulse delay adjustor for adjusting an adjusted timing  
20    pulse delay communicated to the pulse detector for delaying the  
21    adjusted timing pulses for synchronizing the adjusted timing pulses  
22    with the data transition pulses when the running count exceeds the  
23    predetermined threshold value.

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1   2. (Original) The timing recovery loop of claim 1 further  
2   comprising,

3    a data detector for generating a reconstructed digital bit  
4    stream by sampling the baseband signal waveform by the adjusted  
5    timing pulses.

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8   3. (Original) The timing recovery loop of claim 1 further  
9   comprising,

10   a threshold value selector for selecting the threshold value.

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13   4. (Original) The timing recovery loop of claim 1 further  
14   comprising,

15    a threshold value selector for selecting the threshold value,  
16   and

17      an adaptive means for monitoring the rate at which the timing  
18      pulse delay is adjusted, the threshold value selector adaptively  
19      selecting different threshold values when the adjustment rate  
20      exceeds a predetermined rate.

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1    5. (Original) The timing recovery loop of claim 1 further  
2    comprising,

3        a count magnitude generator for generating the magnitude count  
4    from the running count, the magnitude count being fed to the  
5    threshold comparator for determining when the running count exceeds  
6    the predetermined threshold value, and

7        a count sign clipper for generating a count sign from the  
8    running count, the count sign being fed to the timing pulse delay  
9    adjustor for generating a timing pulse delay to adjust the adjusted  
10   timing pulses, the sign count for increasing the timing pulse delay  
11   when the data transition pulses arrive late relative to the  
12   adjusted timing pulses and for decreasing the timing pulse delay  
13   when the data transition pulses arrive early relative to the  
14   adjusted timing pulses.

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17   6. (Original) The timing recovery loop of claim 1 wherein the pulse  
18   detector comprises,

19        a data transition pulse generator for generating the data  
20   transition pulses,

21        a timing delay for delaying reference timing pulses into the  
22   adjusted timing pulses, and

23        a lead and lag generator for generating lead and lag signals  
24   for early and late arrivals of the data transition pulses relative  
25   to the adjusted timing pulses.

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1    7. (Original) The timing recovery loop of claim 1 wherein the pulse  
2    detector comprises,

3        a data transition pulse generator for generating the data  
4    transition pulses,

5        a timing delay for delaying reference timing pulses into the  
6    adjusted timing pulses, and

7        a data transition pulse counter for counting the number of  
8    data transition pulses within a search window following an adjusted  
9    timing pulse, and

10       a lead and lag generator for generating lead and lag signals  
11    for early and late arrivals of the data transition pulses relative  
12    to the adjusted timing pulses when one and only one data transition  
13    pulse occurs within each search window following an adjusted timing  
14    pulse.

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1       8. (Original) The timing recovery loop of claim 1 wherein the pulse  
2       detector comprises,

3                a data transition pulse generator for generating the data  
4       transition pulses,

5                a window delay for delaying the data transition pulses by half  
6       of a search window to center the data transition pulses within  
7       respective search windows,

8                a timing delay for delaying by a timing pulse delay the  
9       reference timing pulses into the adjusted timing pulses, the timing  
10      pulse delay being generated by the timing delay adjustor, the  
11      timing pulse delay being adjusted when the running count exceeds  
12      predetermined threshold value,

13               a data transition pulse counter for counting the number of  
14       data transition pulses within the search window following an  
15       adjusted timing pulse, and

16               a lead and lag generator for generating lead and lag signals  
17       for early and late arrivals of the data transition pulses relative  
18       to the adjusted timing pulses when one and only one data transition  
19       pulse occurs within a respective one of the search windows  
20       following a respective one of the adjusted timing pulses.

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24       9. (New) The timing recovery loop of claim 1, wherein,

25               the random walk counter sums the lead signals and lag signals as  
26       the running count.

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